ABSTRACT

The effective coherence of a synchrotron beam line can be tailored to projection lithography requirements by employing a moving holographic diffuser and a stationary low-cost spherical mirror. The invention is particularly suited for use in an illuminator device for an optical image processing system requiring partially coherent illumination. The illuminator includes: (1) a synchrotron source of coherent or partially coherent radiation which has an intrinsic coherence that is higher than the desired coherence, (2) a holographic diffuser having a surface that receives incident radiation from said source, (3) means for translating the surface of the holographic diffuser in two dimensions along a plane that is parallel to the surface of the holographic diffuser wherein the rate of the motion is fast relative to integration time of said image processing system; and (4) a condenser optic that re-images the surface of the holographic diffuser to the entrance plane of said image processing system.

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